



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8960

OCT 19 2017

Mr. Thomas Frick
Director
Division of Environmental Assessment & Restoration
Florida Department of Environmental Protection
Mail Station 3000
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Frick:

The U.S. Environmental Protection Agency has completed its review of the document titled *Nutrient TMDL for Lake Weir (WBID¹ 2790A)*. The Florida Department of Environmental Protection (FDEP) submitted the Lake Weir Total Maximum Daily Loads (TMDLs) and revised chapter 62-304, Florida Administrative Code (F.A.C.),² including the numeric nutrient criteria (NNC) for the subject water, in a letter to the EPA dated June 19, 2017 as TMDLs and as new or revised water quality standards (WQSs) with the necessary supporting documentation and certification by FDEP General Counsel, pursuant to Title 40 of the Code of Federal Regulations part 131.

The NNC were adopted under chapter 62-304.500(22) as site specific numeric interpretations of paragraph 62-302.530(48)(b).³ As referenced in paragraph 62-302.531(2)(a), FDEP intends for the submitted NNC to serve in place of the otherwise applicable criteria for lakes set out in paragraph 62-302.531(2)(b). The total nitrogen and total phosphorus TMDLs for Lake Weir would also constitute site specific numeric interpretations of the narrative nutrient criterion set forth in paragraph 62-302.530(48)(b), for this water segment.

FDEP submitted the Lake Weir TMDLs to the EPA for review pursuant to both Clean Water Act (CWA) sections 303(c) and 303(d) since the TMDLs will also act as a Hierarchy 1 (H1) site-specific interpretation of the state's narrative nutrient criterion pursuant to 62-302.531(2)(a)1.a. The EPA acknowledges that by virtue of establishing the TMDLs in chapter 62-304, FDEP is also establishing an H1 interpretation of the narrative nutrient criterion for this waterbody as new or revised WQSs. The enclosed, combined WQS and TMDL decision document summarizes the EPA's review and approval of the WQSs and TMDLs.

¹ WBID refers to **waterbody identification**

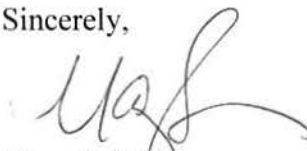
² Unless otherwise stated, all rule and subsection citations are to provisions in the Florida Administrative Code.

³ FDEP recently revised the table of surface water criteria set out at section 62-302.530, F.A.C., adding parameters to the table to incorporate new human health criteria promulgated by the state in 2016. These additions resulted in the state narrative nutrient criteria being renumbered from paragraphs 62-302.530(48)(a) and (b), F.A.C. to paragraphs 62-302.530(90)(a) and (b), F.A.C. The new criteria have not yet been submitted to the EPA for review under the CWA and are not effective for CWA purposes. In this document, the EPA refers to the narrative nutrient criteria as paragraphs 62-302.530(48)(a) and (b).

In accordance with sections 303(c) and (d) of the CWA, I am hereby approving the TMDLs promulgated in chapter 62-304 for Lake Weir as both TMDLs and as revised WQSs for total nitrogen and total phosphorus. Any other criteria applicable to these waterbodies remain in effect, especially those related to chlorophyll *a* in paragraph 62-302.531(2)(b)1, and including other applicable criteria at 62-302.531(2)(b). The requirements of paragraph 62-302.530(48)(a) also remain applicable.

If you have any comments or questions relating to the approval of the H1 WQSs or TMDLs, please contact me at (404) 562-9345, or have a member of your staff contact Dr. Katherine Snyder in the WQS program at (404) 562-9840 or Ms. Laila Hudda in the TMDL program at (404) 562-9007.

Sincerely,

A handwritten signature in black ink, appearing to read 'MSW', is written over a faint circular stamp.

Mary S. Walker
Director
Water Protection Division

Enclosure

cc: Mr. Kenneth Hayman, FDEP
Ms. Stacey Cowley, FDEP
Mr. Daryll Joyner, FDEP
Ms. Erin Rasnake, FDEP

Florida Numeric Interpretation of the Narrative Nutrient Water Quality Criterion Through Total Maximum Daily Loads (TMDLs) to Establish a Hierarchy 1 (H1): Joint Water Quality Standards (WQSs) and TMDL Decision Document

H1: Nutrient TMDL for Lake Weir (waterbody identification (WBID) 2790A)

ATTAINS TMDL ID: 67528

Location: Marion County, Florida

Status: Final

Criteria Parameter(s): The Lake Weir TMDL allocation for WBID 2790A is 27,432 kg/yr for total nitrogen (TN) and 1,667 kg/yr for total phosphorus (TP) expressed as 7-year averages of annual loads, not to be exceeded.

Impairment/Pollutant: Lake Weir is a 5,600-acre lake located in Marion County in central Florida, about 15 miles southeast of Ocala and 15 miles north of Leesburg, in the Ocklawaha River Basin and the Marshall Swamp Area. This area is situated in the Lake Weir/Leesburg Upland Lake Region (Region 75-14), which is characterized by high elevations ranging from 75 to 125 feet with sandy soils above clayey sand soils. The lakes in this region are predominantly clear, acidic to neutral, and oligotrophic to mesotrophic. Lake Weir is the largest lake in the region and consists of the larger Lake Weir proper and Sunset Harbor to the southeast. There are no inlet streams except a canal that connects Little Lake Weir to the Sunset Harbor portion of Lake Weir. The other major sources of water to the lake include surface flow around the lake's small watershed, ground water inflow and rainfall into the lake. Surface water flows through a man-made weir structure that mirrors the once natural drainage to the Ocklawaha River in the northeast portion of the lake.

Based on water quality data the lake is considered low color and alkalinity. The lake was verified as impaired due to an elevated Trophic State Index (TSI) value of 40 and was included on the verified list in 2002. The calculated TSI for each year was based on TN, TP, and Chlorophyll *a* (Chl*a*) monitoring data. According to the TMDL document out of the "12 years with sufficient data, the annual geometric mean (AGM) Chl*a* concentration exceeded the 6 µg/L target in 2005, 2006, 2007, 2008, 2009, 2011, and 2012. For these years, the [now] applicable TN and TP criteria are the minimum TN and TP concentrations listed in Table 3.1 for low-color and low-alkalinity lakes, or 0.51 and 0.01 mg/L, respectively. In 2010, the TN and TP minimum criteria also apply because there were insufficient data to calculate Chl*a*." Therefore, the lake was not supporting its designated use of Class III Freshwater (recreation and propagation and maintenance of a healthy, well-balanced population of fish and wildlife).

Background: The Florida Department of Environmental Protection (FDEP) submitted the final H1 for the *Nutrient TMDL for Lake Weir (WBID 2790A)* (the "H1," "TMDL," or "Report") by letter dated June 19, 2017. The draft H1 TMDL report for Lake Weir is dated June 2016 and was received July 5, 2016. The final Lake Weir H1 dated May 2017 includes H1 target concentrations and loads. A final Lake Weir H1 was delivered in person to the EPA R4 staff for review on June 28, 2017.

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Lake Weir (WBID 2790A)/Ocklawaha River Basin – Nutrients

The submission included:

- Submittal letter
- Nutrient TMDL for Lake Weir and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Nutrient Criterion
- Documents related to Public Workshop
- Documents related to Public Hearing
- Documents related to Public Notice for Rulemaking and Rule Adoption
- Public Comments Received

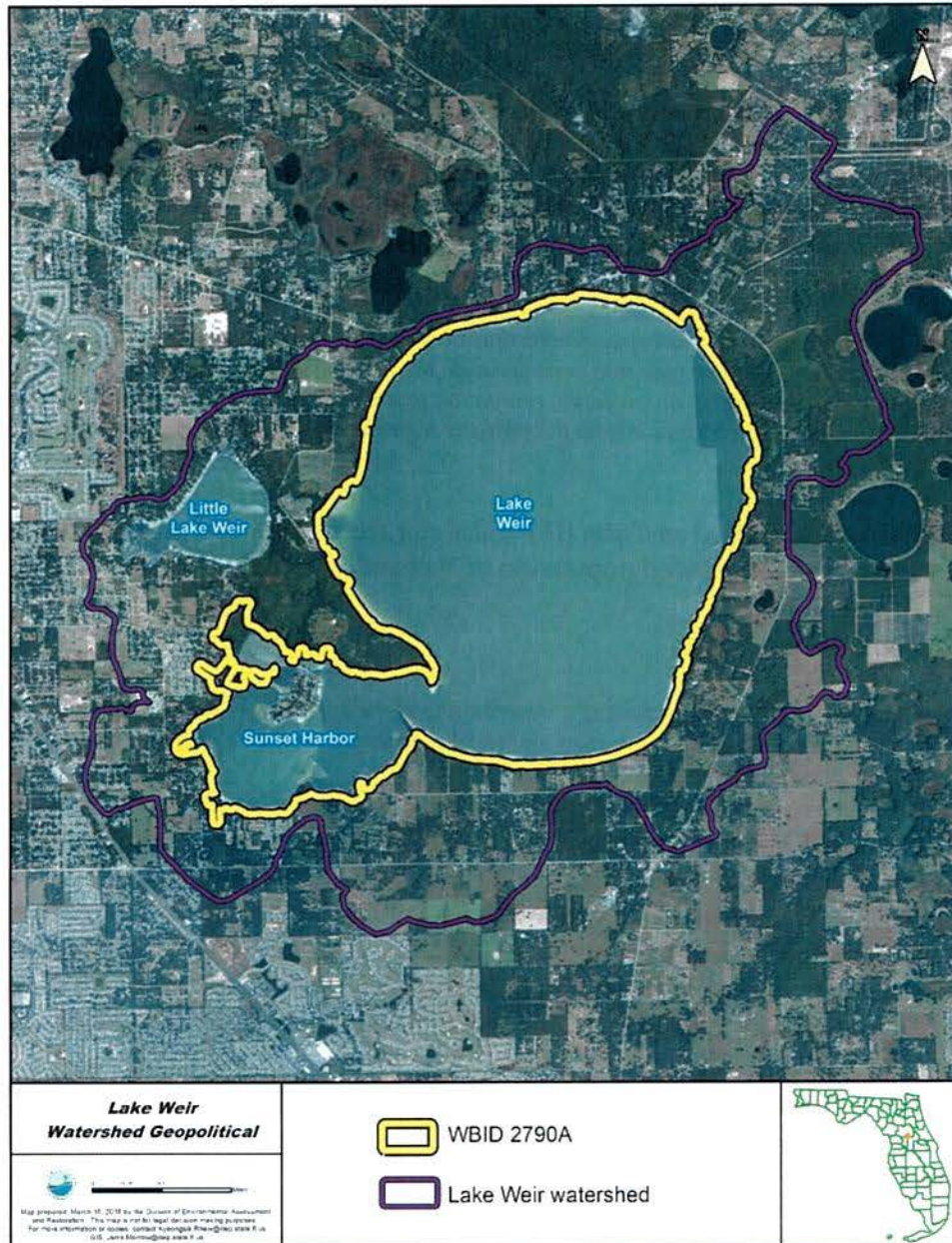
This document explains how the submission meets the Clean Water Act (CWA) statutory requirements for the approval of WQSs under section 303(c) and of TMDLs under section 303(d), and the EPA's implementing regulations in Title 40 of the Code of Federal Regulations (40 CFR) parts 131 and 130, respectively.

REVIEWERS: WQS: Lydia Mayo, Environmental Scientist, mayo.lydia@epa.gov
 TMDL: Laila Hudda, Florida TMDL Coordinator, hudda.laila@epa.gov

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Waterbodies addressed in this H1 Approval Action:

Lake Weir	WBID 2790A	5,600 acres
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Lake Weir (WBID 2790A)/Ocklawaha River Basin – Nutrients

This document contains the EPA's review of the above-referenced H1. This review document includes WQS and TMDL review guidelines that state or summarize currently effective statutory and regulatory requirements applicable to this approval action. Review guidelines are not themselves regulations. Any differences between review guidelines and the EPA's implementing regulations should be resolved in favor of the regulations themselves. The italicized sections of this document describe the EPA's statutory and regulatory requirements for approvable H1s. The sections in regular type reflect the EPA's analysis of the state's compliance with these requirements.

I. WQS Decision – Supporting Rationale

Section 303(c) of the CWA and the EPA's implementing regulations at 40 CFR section 131 describe the statutory and regulatory requirements for approvable WQSs. Set out below are the requirements for WQS submissions, under the CWA and the regulations. The information identified below is necessary for the EPA to determine if a submitted WQS meets the requirements of the CWA and, therefore, may be approved by the EPA.

1. Use Designations

Section 131.10(a) provides that each state must specify appropriate water uses to be achieved and protected. The classification of the waters of the state must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation. In no case shall a state adopt waste transport or waste assimilation as a designated use for any waters of the United States.

Assessment: Lake Weir is classified as Class III Freshwater (recreation and propagation and maintenance of a healthy, well-balanced population of fish and wildlife).

2. Protection of Downstream Uses

Section 131.10(b) provides that in designating uses of a waterbody and the appropriate criteria for those uses, the state shall take into consideration the WQSs of downstream waters and shall ensure that its WQSs provide for the attainment and maintenance of the WQSs of downstream waters.

Rule 62-302.531(4) of the Florida Administrative Code (F.A.C.) requires that downstream uses be protected. Lake Weir drains to Lake Weir Outlet (WBID 2786) through a constructed weir structure located in the northeast portion of the lake when water levels are high. The Lake Weir outlet discharges to the Ocklawaha River via Marshall Swamp Drain (WBID 2778). The downstream numeric nutrient criteria (NNC) for streams which would include the Lake Weir Outlet and the Marshall Swamp Drain stream segments are higher than the newly developed criteria applicable in Lake Weir.

Assessment: The H1 is providing use protection for the downstream waters.

3. Water Quality Criteria

Section 131.11(a) provides that states must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use.

FDEP used the TSI to determine that Lake Weir was impaired for nutrients for the verified period in 2002 and subsequent assessments indicated that the NNC were also not being met. To establish the nutrient targets for Lake Weir, FDEP used the generally applicable 6 µg/L Chla criterion as a target

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because this level is considered protective of the designated use of this low-color and low alkalinity lake. See 62-302.531(2)(b), F.A.C.

In order to determine site-specific TN and TP targets for the TMDLs, FDEP used a modeling approach to relate simulated watershed TN and TP loads to simulated ambient TN and TP lake concentrations (page 10 of the Report). The watershed simulation was conducted using the Natural Resources Conservation Service's (NRCS) curve number model for watershed runoff calculation and multiplying the runoff volume by TN and TP event mean concentrations to calculate the total watershed nutrient loads. In these TMDLs, nutrients deposited onto the lake surface from the atmosphere and nutrient loadings through ground water seepage were accounted for through approximation. All modeled nutrient loads were entered into the lake BATHTUB eutrophication model (nutrient balance model and eutrophication response model), which was developed by the United States Army Corps of Engineers to simulate ambient lake TN, TP, and Chl a concentrations. Additional modeling methodology used in this report included ArcNLET (ArcGIS-based Nitrate Load Estimation Toolkit developed by Florida State University), St. Johns River Water Management District Pollutant Load Simulation Model, and current condition and background models.

In addition, the watershed nutrient loadings were linked to the ambient lake TN, TP, and Chl a concentrations through appropriate model calculations and adjustments. The natural background TN, TP, and Chl a concentrations of the lake were simulated by converting all human land uses in the watershed model to natural land areas (forest/rangeland area). The final TN and TP concentration targets were calculated by modeling the concentrations needed to achieve the Chl a criterion of 6 $\mu\text{g/L}$ in the lake. The final TN concentration was determined to be 0.68 mg/L and the final TP concentration was determined to be 0.01 mg/L. By utilizing the water quality models listed above, FDEP established nutrient loads that attain the target TN and TP concentrations and Chl a criterion. The developed TMDLs "are the site-specific numeric interpretations of the narrative nutrient criterion for Lake Weir" (page 11 of the Report).

Assessment: The Lake Weir TMDL allocation is 27,432 kg/yr for TN and 1,667 kg/yr for TP expressed as 7-year averages of annual loads, not to be exceeded. The loads were derived from watershed model TN and TP lake targets of 0.01 mg/L for TP and 0.68 mg/L for TN expressed as long term average AGMs. The concentrations are given for comparative purposes only. The criteria are expressed as loads. The resulting water quality will protect the designated uses for this waterbody. Any other criteria applicable to this waterbody remain in effect, including the nutrient criteria for parameters set out in 62-302.531(2)(b) F.A.C.

4. Scientific Defensibility

Section 131.11(b) provides that, in establishing criteria, states should establish numerical values based on 304(a) guidance, 304(a) guidance modified to reflect site-specific conditions, or other scientifically defensible methods.

Lake Weir was verified for impairment for nutrients based upon TSI data during the verified period in 2002 and subsequent assessments indicated that the generally applicable NNC were also not being met. This TMDL document based the TN and TP targets on the generally applicable Chl a criterion of 6 $\mu\text{g/l}$ for low color and low alkalinity lakes including Lake Weir. The loads were derived from watershed model TN and TP in-lake targets of 0.01 mg/L for TP and 0.68 mg/L for TN expressed as long term average AGMs. The concentrations are given for comparative purposes only. These values correspond

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to long term (7-year) averages of annual loads of TN of 27,432 kg/yr and TP of 1,667 kg/yr. The resulting water quality is expected to protect the designated uses for this waterbody.

Assessment: The EPA determined that the selection of a Chla value of 6 µg/L as the response variable target is appropriate and the technical approach to calculate the total watershed nutrient loads results is scientifically sound. These approaches which include the U.S. Army Corps of Engineers BATHTUB model and NRCS model to calculate the total watershed nutrient loads are described in the cited TMDL document.

5. Public Participation

Section 131.20(b) provides that states shall hold a public hearing when revising WQSs, in accordance with provisions of state law and the EPA's public participation regulation (40 CFR part 25). The proposed WQS revision and supporting analyses shall be made available to the public prior to the hearing.

A public workshop was conducted by FDEP on July 19, 2016 in Lady Lake, Florida, to obtain comments on the draft nutrient TMDLs for Lake Weir. The workshop notice indicated that the nutrient TMDLs, if adopted, constitute site-specific numeric interpretations of the narrative criterion set forth in paragraph 62-302.530(48)(b), F.A.C.,¹ that would replace the otherwise applicable NNC in subsection 62-302.531(2) for these particular waters. FDEP also held a public hearing on February 3, 2017 in Tallahassee, Florida.

Assessment: FDEP has met the public participation requirements for this H1.

6. Certification by the State Attorney General

Section 131.6(e) requires that the state provide a certification by the State Attorney General or other appropriate legal authority within the state that the WQSs were duly adopted pursuant to state law.

A letter from FDEP General Counsel, Frederick L. Aschauer, Jr., dated June 19, 2017 certified that the Lake Weir TMDLs were duly adopted as WQSs pursuant to state law.

Assessment: FDEP has met the requirement for Attorney General certification for this H1.

7. Endangered Species Section 7 Consultation

Section 7(a)(2) of the Endangered Species Act (ESA) requires federal agencies, in consultation with the Services, to ensure that their actions are not likely to jeopardize the continued existence of federally listed species or result in the destruction or adverse modification of designated critical habitat of such species.

The existing default NNC for the waterbody received concurrence by the U.S. Fish and Wildlife Service on July 31, 2013. Because the TN and TP loads established as site-specific TN and TP concentrations

¹ FDEP recently revised the table of surface water criteria set out at section 62-302.530, F.A.C., adding parameters to the table to incorporate new human health criteria promulgated by the state in 2016. These additions resulted in the state narrative nutrient criteria being renumbered from paragraphs 62-302.530(48)(a) and (b), F.A.C. to paragraphs 62-302.530(90)(a) and (b), F.A.C. The new criteria have not yet been submitted to the EPA for review under the CWA and are not effective for CWA purposes. In this document the EPA refers to the narrative nutrient criteria as paragraphs 62-302.530(48)(a) and (b).

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for this H1 are within the default criteria (62-302.531(2)(b)1., F.A.C.), an additional ESA section 7 consultation for this standards action is not required.

Assessment: The EPA has met the ESA requirements for this action.

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II. TMDL Review

Section 303(d) of the CWA and the EPA's implementing regulations at 40 CFR Part 130 set out the statutory and regulatory requirements for an approvable TMDL. The following information is generally necessary for the EPA to determine if a submitted TMDL fulfills the legal requirements for approval under section 303(d) and the EPA regulations and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation.

1. Description of Water Body, Pollutant of Concern and Pollutant Sources

The TMDL analytical document must identify the waterbody as it appears on the state/tribe's 303(d) list, including the pollutant of concern. The TMDL submittal must include a description of the point and nonpoint sources of the pollutant of concern, including the magnitude and location of the sources. Where it is possible to separate natural background from nonpoint sources, a description of the natural background must be provided, including the magnitude and location of the source(s). Such information is necessary for the EPA's review of the load and wasteload allocations, which are required by regulation. The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as: (1) the assumed distribution of land use in the watershed; (2) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources; (3) present and future growth trends, if taken into consideration in preparing the TMDL; and (4) explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments or Chla and phosphorus loadings for excess algae.

Lake Weir is situated in the Lake Weir/Leesburg Upland Lake Region (Region 75-14), which is characterized by high elevations ranging from 75 to 125 feet with well-drained sandy soils above deeply weathered, clayey sand. Lake Weir is the largest lake in the region. The lake consists of two distinct portions: Lake Weir proper and Sunset Harbor. There are no major inlet streams to the lake, except a canal connecting Little Lake Weir (located west of Lake Weir) and Sunset Harbor. When water levels are higher, surface water may discharge to the Ocklawaha River over a weir structure located in the northeast corner of the lake.

Lake Weir was verified as impaired for nutrients. In Florida waterbodies, either nitrogen or phosphorus is most often the limiting nutrient, but based on recent studies the reduction of both nitrogen and phosphorus are necessary to control algal growth in aquatic systems.

The dominant land use type in the watershed in 2004 was low-density residential, which covered 1,700 acres and accounted for 23.2% of the total watershed area. The second largest land use type in 2004, forest/rangeland, covered 1,619 acres and accounted for 22.1% of the watershed area. The third largest land use type, pastureland, occupied 860 acres of land and accounted for 11.7% of the total watershed area. Overall, human land uses, including all the residential, commercial, industrial, and agricultural areas, occupied 4,418 acres of the watershed and accounted for 60% of the total watershed.

No National Pollutant Discharge Elimination System (NPDES) permitted wastewater facilities were identified in the Lake Weir watershed that discharge directly to surface waters. No Phase I Municipal Separate Storm Sewer System (MS4) permittees were identified in the watershed. In the Lake Weir watershed, the stormwater collection systems owned and operated by Marion County are covered by a Phase II NPDES MS4 permit (FLR04E021). Nonpoint sources primarily include loadings from surface runoff, ground water seepage entering the lake, and precipitation directly onto the lake's surface.

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Assessment: The EPA concludes that FDEP has adequately identified the impaired waterbodies, the pollutant of concern, and the magnitude and location of the pollutant sources.

2. Description of the Applicable WQS and Numeric Water Quality Target

The TMDL submittal must include a description of the applicable state/tribe WQSs, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the statewide antidegradation policy. Such information is necessary for the EPA's review of the load and wasteload allocations which are required by regulation. A numeric water quality target for the TMDL (a quantitative value used to measure whether or not the applicable WQS is attained) must be identified. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, usually site-specific, must be developed from a narrative criterion and a description of the process used to derive the target must be included in the submittal.

Lake Weir is a Class III (fresh) waterbody with a designated use of fish consumption, recreation, and propagation and maintenance of a healthy, well balanced population of fish and wildlife. The Class III water quality criterion that is applicable to the verified impairment (nutrients) for this water is Florida's nutrient criterion in Paragraph 62-302.530(48)(b), F.A.C. FDEP believes that the lake-specific NNC is more representative of natural conditions in the lake than the generally applicable TN and TP NNC. This action does not revise the generally applicable Chla criterion.

The TN and TP concentration targets, which are 0.68 and 0.01 mg/L, respectively, were derived based on the background condition of modeling results for the nutrient concentrations needed to achieve the applicable Chla criterion of 6 µg/L. Using the water quality models, FDEP established the nutrient loads that attain the target nutrient concentrations and Chla criterion. These nutrient loads are the site-specific numeric interpretations of the narrative nutrient criterion for Lake Weir. The detailed process for developing the water quality target is explained in Chapters 3 and 5 of the TMDL report and is also summarized in section I-3 above.

Assessment: The EPA concludes that FDEP has properly addressed its WQSs when setting a numeric water quality target.

3. Loading Capacity - Linking Water Quality and Pollutant Sources

As described in the EPA guidance, a TMDL identifies the loading capacity of a waterbody for a particular pollutant. The EPA regulations define loading capacity as the greatest amount of loading that a water can receive without violating WQSs (40 CFR section 130.2(f)). The loadings are required to be expressed as either mass-per-time, toxicity or other appropriate measure (40 CFR section 130.2(i)). The TMDL submittal must identify the waterbody's loading capacity for the applicable pollutant and describe the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In most instances, this method will be a water quality model. Supporting documentation for the TMDL analysis must also be contained in the submittal, including the basis for assumptions, strengths and weaknesses in the analytical process, results from water quality modeling, etc. Such information is necessary for the EPA's review of the load and wasteload allocations which are required by regulation.

In many circumstances, a critical condition must be described and related to physical conditions in the waterbody as part of the analysis of loading capacity (40 CFR section 130.7(c)(1)). The critical condition can be thought of as the "worst case" scenario of environmental conditions in the waterbody in which the loading expressed in the TMDL for the pollutant of concern will continue to meet WQSs. Critical conditions are the combination of environmental factors (e.g., flow, temperature, etc.) that results in attaining and maintaining the water quality criterion and has an acceptably low frequency of occurrence. Critical conditions are important because they describe the factors that combine to cause a violation of WQSs and will help in identifying the actions that may have to be undertaken to meet WQSs.

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As described in section I-3 of this decision document, the TP and TN loadings from the Lake Weir watershed were estimated using the curve number approach (further details are in Chapter 4 of the Report). The calibrated BATHTUB model was used to predict in-lake existing TN, TP, and Chl_a concentrations. The loadings to the lake corresponding to natural background conditions were determined and then adjusted until the model simulated the in-lake target concentrations derived in Chapter 3 of the Report, that is, TN of 0.68 mg/l and TP of 0.01 mg/L. The nutrient loadings that resulted in the target concentrations were considered the TMDLs for the lake, i.e., TN = 27,432 kg/yr. and TP = 1667 kg/yr. Details of the relationship between nutrient loadings, in-lake nutrients, and Chl_a concentrations and of the BATHTUB model used in establishing the relationship and arriving at the TMDLs for Lake Weir are all covered in Chapter 5 of the TMDL report.

As mentioned in Appendix A-2 of the Report, the model simulated the 2000–12 period, which included both wet and dry years. During the model simulation period, the total annual average rainfall shown in Table 4.3 varied from 24.8 to 59.0 inches and averaged 47.3 inches. A comparison with the long-term average rainfall data indicated that 2000 and 2006 were dry years, while 2002, 2004, 2005, and 2009 were considered wet years. Thus consideration of both wet and dry years addresses nutrient loading from extreme storm water runoff events.

Assessment: The EPA concludes that the loading capacity, having been calculated using the EPA-reviewed water quality models, and using observed concentration data and water quality targets consistent with numeric water quality criteria, has been appropriately set at a level necessary to attain and maintain the applicable WQSs. The H1 is based on a reasonable approach for establishing the relationship between pollutant loading and water quality.

4. Load Allocation (LA)

The EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity allocated to existing and future nonpoint sources and to natural background (40 CFR section 130.2(g)). Load allocations may range from reasonably accurate estimates to gross allotments (40 CFR section 130.2(g)). Where it is possible to separate natural background from nonpoint sources, load allocations should be described separately for background and for nonpoint sources.

If the TMDL concludes that there are no nonpoint sources and/or natural background, or the TMDL recommends a zero load allocation, the LA must be expressed as zero. If the TMDL recommends a zero LA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero LA implies an allocation only to point sources will result in attainment of the applicable WQSs, and all nonpoint and background sources will be removed.

As stated in the Report, the current TN and TP loads require reductions of 19% and 39%, respectively to achieve the target loads. As these percent reductions are for the total loads from all sources and any natural land uses are held harmless, the percent reductions for the anthropogenic sources may be greater. It should be noted that the LA may include loads from stormwater discharges regulated by FDEP and the St. Johns River Water Management District (SJRWMD) that are not part of the NPDES Stormwater Program.

Assessment: The EPA concludes that the LAs provided in the TMDL report are reasonable and will result in attainment of the WQSs.

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5. Wasteload Allocation (WLA)

The EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to existing and future point sources (40 CFR section 130.2(h)). If no point sources are present or if the TMDL recommends a zero WLA for point sources, the WLA must be expressed as zero. If the TMDL recommends a zero WLA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero WLA implies an allocation only to nonpoint sources and background will result in attainment of the applicable WQSs, and all point sources will be removed.

In preparing the WLAs, it is not necessary that each individual point source be assigned a portion of the allocation of pollutant loading capacity. When the source is a minor discharger of the pollutant of concern or if the source is contained within an aggregated general permit, an aggregated WLA can be assigned to the group of facilities. However, it is necessary to allocate the loading capacity among individual point sources as necessary to meet the WQSs.

The TMDL submittal should also discuss whether a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. In such cases, the state/tribe will need to demonstrate reasonable assurance that the nonpoint source reductions will occur within a reasonable time.

The only NPDES-permitted discharges identified in the Lake Weir watershed that discharge directly to surface waters are stormwater discharges. Because no information was available to FDEP when this analysis was conducted regarding the boundaries and locations of all the NPDES stormwater dischargers, the exact stormwater TN and TP loadings from MS4 areas were not explicitly estimated. In the Lake Weir watershed, the stormwater collection systems owned and operated by Marion County are covered by a Phase II NPDES MS4 permit (FLR04E021). The WLA for NPDES regulated stormwater was set as the same percent reduction required to achieve the TMDLs as for the other conventional nonpoint sources, i.e., 19% for TN and 39% for TP, respectively. No NPDES-permitted wastewater discharges were identified in the Lake Weir watershed.

Assessment: The EPA concludes that the WLAs provided in the TMDL report are reasonable and will result in the attainment of WQSs. This is because the H1 accounts for all point sources discharging to impaired segments in the watershed and the WLAs require that TN and TP loads comply with the TMDL targets.

6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA section 303(d)(1)(C), 40 CFR section 130.7(c)(1)). EPA 1991 guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

The document stated that an implicit MOS was used in the development of the Lake Weir TMDLs, consistent with the recommendations of the Allocation Technical Advisory Committee in 2001. The implicit MOS was used because the TMDLs were based on the conservative decisions associated with a number of the modeling assumptions in determining the assimilative capacity (i.e., loading and water quality response) for Lake Weir.

An example of a conservative decision in modeling which added to the MOS was that a long-term simulation for the in-lake TN, TP, and Chla concentrations was carried out using the mean values of

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geometric means of 13 years as input data, instead of using yearly simulations for modeling as detailed in section 5.2.2.1 of the Report. This approach was more appropriate for this lake which had a large year-to-year variations in lake volume, as shown in Table 5.3 of the TMDL report. Additionally, even though the annual average TN/TP ratio for Lake Weir suggested a TP limitation alone could address the nutrient impairment in the lake, FDEP developed both TN and TP TMDL allocations. Algal growth limitation by TN and TP would be different by season, environmental conditions, and algal species composition. Reducing both nitrogen and phosphorus would be more protective and would also add to the MOS.

Assessment: The EPA concludes that the H1 incorporates an adequate margin of safety.

7. Seasonal Variation

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The method chosen for including seasonal variations in the TMDL must be described (CWA section 303(d)(1)(C), 40 CFR section 130.7(c)(1)).

The models developed for hydrologic representation of the watershed flow conditions in Lake Weir used a 13-year period including all seasons and a full range of flow and meteorological conditions. Additionally, as prescribed in paragraph 62-302.531(6), F.A.C., to calculate an AGM for TN, TP, or Chla, there must be at least four temporally independent samples per year taken at least one week apart with at least one sample taken between May 1 and September 30 and at least one sample taken during the other months of the calendar year.

FDEP also examined seasonal trends for TN, TP, and Chla using the quarterly geometric mean values as was presented in Table 5.2 of the Report. Although TN and TP concentrations were slightly higher in the spring and fall and Chla concentrations were high in the fall, there were no statistically significant differences in TN, TP, and Chla concentrations among seasons.

Assessment: The EPA concludes that seasonal variations were considered and that the H1 allocations ensure protection of WQSs throughout all seasons.

8. Monitoring Plan to Track TMDL Effectiveness

EPA's 1991 document, Guidance for Water Quality-Based Decisions: The TMDL Process (EPA 440/4-91-001), recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions, and such a TMDL should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDLs are occurring and leading to attainment of WQSs.

Table A-4 of the TMDL report describes water quality data collection efforts in Lake Weir by FDEP, Marion County, Lake Watch, and the SJRWMD. The data collected through these monitoring activities would be used to evaluate the effect of Best Management Practices (BMPs) implemented in the watershed on the lake's TN and TP concentrations in subsequent water quality assessment cycles. FDEP, Marion County, Lake Watch, and the SJRWMD will continue to carry out monitoring activities in Lake Weir to evaluate future water quality trends in the lake.

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Assessment: Although not a required element of the EPA's TMDL approval process, FDEP indicated that several stakeholders would be carrying out monitoring activities in Lake Weir, which would help to gauge the progress toward attainment of WQSSs. The EPA is taking no action on the monitoring plan.

9. Implementation Plans

On August 8, 1997 Bob Perciasepe (EPA Assistant Administrator for the Office of Water) issued a memorandum, "New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs)," that directs Regions to work in partnership with states/tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired solely or primarily by nonpoint sources. To this end, the memorandum asks that Regions assist states/tribes in developing implementation plans that include reasonable assurances that the nonpoint source load allocations established in the TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. The memorandum also includes a discussion of renewed focus on the public participation process and recognition of other relevant watershed management processes used in the TMDL process. Although implementation plans are not approved by the EPA, they help establish the basis for the EPA's approval of the TMDL.

As specified in the H1, Florida implements statewide regulations to address the issue of nonpoint source pollution by requiring new development and redevelopment to treat stormwater before it is discharged. The stormwater treatment requirements are integrated with other stormwater flood control requirements of the water management districts. The state's water management districts are also required (Chapter 62-40, F.A.C.) to establish stormwater Pollution Load Reduction Goals (PLRGs) and adopt them as part of a Surface Water Improvement and Management plan, other watershed plan, or rule. PLRGs are a major component of the load allocation part of a TMDL.

This TMDL document will be followed by the development and implementation of a Basin Management Action Plan (BMAP) to reduce the amount of nutrients that caused the verified impairment of Lake Weir. Since a BMAP is already adopted for the Upper Chain of Lakes in the Ocklawaha River Basin to provide the conceptual plan for restoration, FDEP suggests that the BMAP for Lake Weir could be incorporated into the effort to address restoration of the Lake.

Assessment: Although not a required element of the TMDL approval, FDEP discussed how information derived from the TMDL analysis process will be used to develop PLRGs and implement BMPs that support implementation of the TMDL. The EPA is taking no action on the implementation portion of the submission.

10. Reasonable Assurances

EPA guidance calls for reasonable assurances when the TMDL is developed for waters impaired by both point and nonpoint sources. In a water impaired by both point and nonpoint sources, where a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur, reasonable assurance that the nonpoint source reductions will happen must be explained in order for the TMDL to be approvable. This information is necessary for the EPA to determine that the load and wasteload allocations will achieve WQSSs.

In a waterbody impaired solely by nonpoint sources, reasonable assurances that load reductions will be achieved are not required in order for a TMDL to be approvable. However, for such nonpoint source-only waters, states/tribes are strongly encouraged to provide reasonable assurances regarding achievement of load allocations in the implementation plans described in section 9, above. As described in the August 8, 1997 Perciasepe memorandum, such reasonable assurances should be included in state/tribe implementation plans and "may be non-regulatory, regulatory, or incentive-based, consistent with applicable laws and programs."

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The TMDL document explains how the information provided in the TMDL report will be used to implement restoration activities in the basin. Following the adoption of a TMDL, implementation takes place through specific requirements in NPDES wastewater and MS4 permits and, as appropriate, through local or regional water quality initiatives or through BMAPs.

In the Lake Weir watershed, the stormwater collection systems owned and operated by Marion County are covered by a Phase II NPDES MS4 permit (FLR04E021). The WLA for NPDES stormwater discharges was set as the same percent reduction required to achieve the TMDLs as for the other conventional nonpoint sources, or 19% for TN and 39% for TP respectively.

This TMDL document will be followed by the development and implementation of a restoration plan to reduce the amount of nutrients that caused the verified impairment of Lake Weir. These activities will depend heavily on the active participation of the SJRWMD, local governments, businesses, and other stakeholders. FDEP plans to work with these organizations and individuals to undertake or continue reductions in the discharge of pollutants and achieve the established TMDLs for impaired waterbodies. A number of these stakeholders (Marion County, LakeWatch, and SJRWMD) have already been actively involved in data collection and analysis, which is a good indication of their interest and commitment in restoring Lake Weir.

Assessment: The EPA considered the reasonable assurances contained in the Report. Point sources are required to comply with their NPDES permits, which must include the requirements and assumptions of the H1. Reductions for nonpoint sources are expected to occur as a result of the incentive and voluntary programs that were already in place or will be developed as part of the BMAP with active participation of its stakeholders.

11. Public Participation

EPA policy is that there must be full and meaningful public participation in the TMDL development process. Each state/tribe must, therefore, provide for public participation consistent with its own continuing planning process and public participation requirements (40 CFR section 130.7(c)(1)(ii)). In guidance, the EPA has explained that the final TMDL submitted to the EPA for review and approval must describe the state/tribe's public participation process, including a summary of significant comments and the state/tribe's responses to those comments. When the EPA establishes a TMDL, EPA regulations require the EPA to publish a notice seeking public comment (40 CFR section 130.7(d)(2)).

Inadequate public participation could be a basis for disapproving a TMDL; however, where the EPA determines that a state/tribe has not provided adequate public participation, the EPA may defer its approval action until adequate public participation has been provided for, either by the state/tribe or by the EPA.

A public meeting to explain the process of the TMDL development was held on November 19, 2014. A public workshop for the Lake Weir TMDLs was held on February 17, 2015 to present the general TMDL approach to local stakeholders. A public hearing on the TMDLs for Ocklawaha River Basin was held on February 3, 2017. FDEP published a notice of development of rulemaking to initiate TMDL development in Florida Administrative Register (FAR) Volume 40, Number 241, December 15, 2014. An updated notice of development of rulemaking was published on April 6, 2015, covering the Ocklawaha River Basin, to address the need for TMDL allocations to be adopted within one year after the notice of development of rulemaking. A notice of rulemaking to establish the TMDLs and to announce a rulemaking workshop to receive public comments was published in the FAR Volume 42, Number 129, July 5, 2016. A notice of public workshop (to be held on July 19, 2016) was also posted on

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the FDEP TMDL website and announced in local newspapers (Ocala Star-Banner) A notice of proposed rule to adopt the TMDLs (which would also constitute site-specific numeric interpretations of the narrative nutrient criterion set forth in paragraph 62-302.530(90)(b), F.A.C.,) was published in the FAR Volume 42, Number 243, December 16, 2016.

For Lake Weir, written comments were received from one entity regarding the TMDL development approach and FDEP reviewed the comments and made clarifications in the revised TMDL report.

Assessment: The EPA concludes that the state involved the public during the development of the H1, provided adequate opportunities for the public to comment on the Report, and provided reasonable responses to the comments received.

12. Submittal Letter

A submittal letter should be included with the TMDL analytical document and should specify whether the TMDL is being submitted for a technical review or is a final submittal. Each final TMDL submitted to the EPA must be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under section 303(d) of the CWA for EPA review and approval. This clearly establishes the state/tribe's intent to submit, and the EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final submittal, should contain such information as the name and location of the waterbody and the pollutant(s) of concern.

Assessment: Accompanying the State's (May 2017) final TMDLs for nutrients was a submittal letter dated June 19, 2017, from Fredrick L. Aschauer, Jr. General Counsel, FDEP, requesting the review and approval of the nutrient TMDLs for: Wacissa River, Wacissa Springs, Crescent Lake, Lake Denham, Lake Weir, Marshall Lake, Lochloosa Lake, Cross Creek, and Lake Roberts.

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III. Conclusion

The Water Protection Division is **APPROVING** the H1 NNC and TMDLs addressed by this decision document in accordance with sections 303(c) and 303(d) of the CWA, as consistent with the CWA and 40 CFR parts 131 and 130, respectively.

The H1 NNC presented in this decision document will constitute the site-specific numeric interpretation of the narrative nutrient criterion set forth in paragraph 62-302.530(48)(b), F.A.C. that will replace the otherwise applicable numeric criteria for TN and TP in subsection 62-302.531(2) for this particular water, pursuant to paragraph 62-302.531(2)(a), F.A.C. Based on the chemical, physical, and biological data presented in the development of the H1 NNC outlined above, the EPA concludes that the revised NNC for TN and TP provide for and protect healthy, well-balanced, biological communities in the waters to which the NNC apply and are consistent with the CWA and its implementing regulations at 40 CFR 131.11.

Therefore, the revised nutrient criteria for TN and TP for Lake Weir are 27,432 kg/yr for TN and 1,667 kg/yr for TP expressed as 7-year averages of annual loads, not to be exceeded. All other criteria applicable to this waterbody remain in effect, including other applicable criteria at 62-302.531(2)(b). The requirements of paragraph 62-302.530(48)(a), F.A.C. also remain applicable.

Furthermore, after a full and complete review, the EPA finds that the H1 for Lake Weir/Ocklawaha River Basin for TN and TP satisfies all of the elements of approvable TMDLs. This approval is for the *Nutrient TMDL for Lake Weir (WBID 2790A) and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Criterion*, addressing Lake Weir for use impairments due to nutrients based on elevated TSI values.